THE >CURSOR GROUP™

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THE TINY MICRO COMPUTER NEWS SERVICE

VOLUMN II | JANUARY/FEBRUARY 1981 | ISSUE 5
$9.75 SEMI-ANNUALLY | $2.00 PER ISSUE

WINTER CES

BY

FRED CORNETT

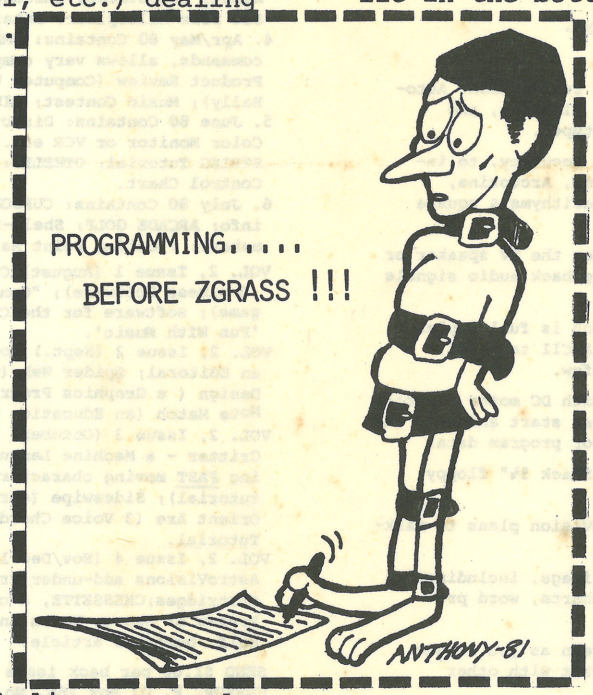
The Consumer Electronic Show (CES) is an exhibition where electronic manufacturers purchase booth space to display new and existing products. This show is closed to the general public and admittance may only be gained by those who can show proof of operating a business (manufacturing, wholesale, retail, etc.) dealing with electronic products.

The purpose of the CES is to allow purchasing agents to see all of what is currently available (or forcasted) and place orders in person. The CES is held semi-annually, winter in Las Vegas, and summer in Chicago. The importance of these two shows cannot be overestimated!

I've attended numerous CES's and have never seen more people in attendance. The Astro-Vision booth was a complete sucess!!! We had one of the busiest booth's at the show! I believe an apology is due the hundreds of subscribers that introduced themselves to me and desired to chat a bit. Things were rather harried at the AstroVision booth and time did not permit me to give each of you as much attention as you deserved. The offshoot was that we signed up several hundred new dealers and distributors and placed over 20,000 orders for units.

Dr. Tom DeFanti and protoge Copper were up to their armpits with the "lookie-loos" (i.e., "My gawd Martha, look at what that computer is doing!"). Tom was happily (albeit somewhat wearily) showing off his long-awaited brain-child, the "Z-GRASS 32". Poor Tom had a crowd around him that lasted four days and even accompanied him to the Men's Room.

Tom had written a program that simulated a popcorn popper (the kind you place on a stove), the popcorn kernels would sizzle in the bottom of the pot, then randomly "pop", with the level continuously rising until the lid was pushed off the popper. This had to be the most realistic popper simulation I've ever seen (far better than the photo published in Creative Computing of another popper).



Now that I've seen the "Z-GRASS 32" add-under, a few discrepancies have surfaced between the specifications I printed in the last issue of CURSOR and what was displayed at the show:

1. The add-under will not include a "Microsoft" type BASIC. The operating system is exclusively "Z-GRASS".

2. Point 6 of the Nov/Dec Cursor set the cassette Baud rate at 2000; that should have read 1800.

3. Point 8 of the Nov/Dec Cursor stated the "Z-GRASS 32" would handle "Hi-Res" graphics; It will not!

I expressed my misgivings regarding the lack of BASIC to Jeff Fredericksen of Dave Nutting & Associates who in turn told

me that he didn't find the unfamiliarity of the ZGRASS language to be a major problem. Jeff had converted a Checkers program (in BASIC) from one of David Ahl's books in only a couple of hours!

Tom DeFanti told me that he had long been disgusted with BASIC which was developed at Dartmouth many years ago for use with calculators and subsequently became the "standard" language of micro-computers. He asked me why many computer users go to the trouble and expense to learn machine language? The answer is not merely one of increase in speed of operation, but to allow the computer to accomplish functions that BASIC is not capable of handling. ZGRASS allows the programmer to write interesting and useful programs more easily. The graphics system is specifically designed for creating games, graphs, video art, and other visual effects. While you can create some of these effects in BASIC, the ZGRASS computer makes it easier because the system is designed for immediate use by artists, teachers, businessmen, and musicians with little or no programming experience.

Over 100K of RAM and ROM memory capacity make the Arcade with ZGRASS keyboard one of the largest personal computers available.

In standard configuration, the Arcade provides 4K of screen RAM. Plug-in cartridges with up to 16K ROM (read-only memory) may be used for additional languages, turn-key graphic systems, and other software expansion. The keyboard contains 32K RAM, expandable to 64K, and 24K ROM. The ROM contains: 1-The ZGRASS language and, 2-Complete scientific mathematics package.

The ZGRASS language includes the following features:

1. A full-screen text editor.
2. POINT, LINE, BOX and CIRCLE commands.
3. String manipulation to include match, concatenation, replacement, etc..
4. Multi-dimensional arrays & string arrays.
5. Both interpreted & compiled modes.
6. Fully automatic storage allocation and reclamation. Automatic type conversion between integer, floating, and strings. No need to declare variable types.
7. Scientific Math Package, with 13 digit accuracy, to include: Sine, Cosine, Tangent, Arctangent, Arccosine, Arcsine, Power, Natural & Base Ten Logarithyms & square root.

The hardware supports the following: Either the TV speaker or your stereo system may be used for playing back audio signals on the cassette.

Two standard RS232 interfaces, one of which is full duplex with handshaking , which will support an ASCII terminal, telephone modem, printer, to name only a few.

Two 1800 Baud audio cassette interfaces with DC motor control; The dual DC motor controls let the computer start and stop the cassettes to merge files or select audio or program data.

Disc controller & connectors for 2 Radio Shack 5¼" floppy disc drives.

In conjunction with the "ZGRASS32", AstroVision plans to market the following peripheral devices:

1. TV PRINTER: Hard copy of any screen image, including: Business forms, forecasts, graphs, charts, word processing, data, etc..
2. LIGHT PEN: Draws directly on the screen as you create artwork, respond to a menu, or interact with other programs.
3. BIT PAD: Digitizer inputs standard artwork, maps, and models in either 2 or 3 dimensions for computer display or analysis.
4. SLIDE COPIER: Works with any 35mm SLR camera to create slides from your TV screen. You can make graphs and illustrations for slide shows, or create film animation sequences.

The "Z-GRASS 32" plugs directly into the 40 pin connector located at the rear of the Arcade (under a plastic punch out). The price remains $599.00.

Dan Dawson, President of AstroVision is very aware of all the broken promises Bally had made regarding the add-under and he is determined that the "Z-GRASS 32" will be available in retail stores this summer!

BACK ISSUES AVAILABLE

We have had numerous requests for info regarding BACK ISSUES! The following are available:

1. Jan. 80 Contains: Electric Bill Analysis; Plastic Puzzle, Instructions for adding a Full-sized ASCII Keyboard; Life Systhesis Model.
2. Feb. 80 Contains: PEEK n' POKE: Hex to Decimal Converter; String Array @(A) Memory Locator; Instructions on how to add a Printer; Bubble Sort; Camel; Memory Map; WUMPUS.
3. Mar. 80 Contains: Three Voice Music Assembler; Star Wars Music; Chopsticks; Chicago Loop; Lace Curtain; Character Set Size Multiplier; Rotation; National Distributor Info.
4. Apr/May 80 Contains: DMA Graphics (eliminates BOX & LINE commands, allows very complex graphics!); Reference Books, Product Review (Computer Ear-Speech Recognition Unit for Bally); Music Contest; RING; Alarm Clock; Byte Saving Hints.
5. June 80 Contains: Direct Color Video/Audio Circuit (for Color Monitor or VCR etc.); Galactibattle (Game); PRINT & STRING Tutorial; OTHELLO: ASCII Conversion Chart; Cursor Control Chart.
6. July 80 Contains: CURSOR Keyboard & 48K Memory Add-On info; ARCADE GOLF; Shell-Metzner Sort; Wavemakers "Maze-maker:; Floating Point Math; User Group Meetings.

VOL. 2, Issue 1 (August) Contains: Cursor Inventory Control (Business Software); "Connect Four" (a professional quality game); software for the Computer Ear (Anderson Research) - 'Fun With Music'.

VOL. 2, Issue 2 (Sept.) Contains: ASTROVISION ACQUIRES BALLY - an Editoral; Spider Web (Graphics Program); Reverse (Game); Design (a Graphics Program); Match Quiz (an Education Program); Note Match (an Education Program).

VOL. 2, Issue 3 (October) Contains: Peek n' Poke Tutorial; Critter - a Machine Language Program that creates a non-blinking FAST moving character; Poor Mans Memory Expansion (a tutorial); Sideswipe (car driving game); We Three Kings of Orient Are (3 Voice Chord Music); Machine Language Graphics Tutorial.

VOL. 2, Issue 4 (Nov/Dec 1981) Contains: "Z-GRASS 32"; AstroVisions add-under;Product Review of all Bally Game Cartridges;CHESSETTE, a computer chess program; Software Review of George Moses and WaveMakers products; The Forgotten Half, humerous article.

SEND $1.60 per back issue desired OR $9.75 for Volumn 1 to: CURSOR, P. O. Box 266, No. Hollywood, CA 91603.

BLANK HIGH QUALITY TAPE

If you have wanted High Quality "Glitch Free" Computer Digital Tape Cassettes such as those RADIO SHACK sell for upwards of $3.50 each but didn't want to pay the price, try CURSOR Brand C20 Digital Tapes. 10 TAPE CASE (includes individual poly boxes) $13.75 including postage.

CHEAP TIME SAVING DEVICE

Do you only input the short programs in CURSOR because you didn't want to spend two hours inputting the long ones - only to find you made input errors and will have to spend one more hour debugging? If so, why not spare yourself all the trouble and buy your issues on tape? $3.95 per Issue OR $7.40 for any two Issues (includes postage, etc.).

CURSOR TO START RAPID PRODUCT DELIVERY

FRED CORNETT JIM TERRY

The Cursor Group takes great pleasure in announcing the addition of Mr. James A. Terry to it's staff. Jim's position is Vice President for Operations.

★★★★★★★★★★★★★★★★★★★★★★★★★

NEW POLICIES BY JIM TERRY VP OPERATIONS

To the best of my knowledge, most of our readers are well satisfied with our issue content and the quality of our products. However, the one glaring area that has required my immediate attention is SERVICE!!

Starting immediately, we will publish CURSOR once monthly, with a mailing cut off date firmly set at the 20th.

The problems CURSOR has been having are not unique. Most business structures fail not from a lack of business, but from an overabundance! Our business had grown too rapidly and outpaced our organizational capacity to effectively handle it. To alleviate that situation, my position has been created and subsequently I have re-organized and formatted our mail-order department.

Effective immediately, all mail orders will be processed as follows:

1. All orders for non-hardware items such as manuals, back-issues, etc., or selected items such as blank tape, issues on tape, software on tape, head demagnetizers, etc., *will be shipped within 72 hours* (excluding weekends & holidays) if order is accompanied by *Money Order.*
2. If your order falls into the category of #1 above, but payment is by check, *your order will be shipped within 10 working days of our receipt.*
3. BALLY Cartridges: All BALLY cartridges and hardware will be shipped using the above schedules. However if a BALLY item is momentarily out of stock, we will send you a written notice to that effect with the expected shipment date.

All orders will be acknowledged either by shipping the merchandise within the time-frame specified above, or by letter of explanation. We do want your business very much, and in exchange for it, we will give you excellent service.

C.O.D.: We will ship any "CURSOR" merchandise C.O.D.. We are not able to ship Bally cartridges C.O.D.. There is a $2.75 handling charge for all C.O.D. orders (plus Post Office C.O.D. fee). If you wish to place a C.O.D. order, call 213/843-7332 during business hours, or drop us a line.

During the Christmas season, we added a few thousand new subscribers who may not be aware of our beginner level manuals. Three of these manuals are vital to put the arcade through it's paces:

1. HACKERS MANUAL-Explains the additional BASIC commands available that your Bally booklet did not describe.
2. PEEK n' POKE MANUAL-Explains in detail (step-by-step) the most powerful programming techniques possible on the Bally, such as those used for the 256 Color program in this issue.
3. ON-BOARD ROM SUBROUTINES MANUAL-Used in conjunction with the PEEK n' POKE manual. Allows you to do things that are virtually impossible with only BASIC, such as the game cartridges.

To show you we are determined to give you good service, we have slashed the price of these three manuals. The standard price for all three is $16.03 (price will go up with March issue due to postal increase) including first class postage. Send us a money order or check for the "3 MANUAL OFFER" postmarked prior to 20 March 1981, and get them for $13.95(price includes first class postage). C.O.D. orders accepted. *Give our new fast service a try, we know you'll be satisfied!!!*

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IMPORTANT PROGRAMMING NOTICE:

It is sometimes difficult to ascertain the correct number of spaces with a PRINT statement. To facilitate ease of input, we are using the special character "ς" to designate a SPACE where-ever confusion could exist.

Also, please note that we are underlining all Command Words such as PRINT, FOR, etc., so that you can save the appropriate bytes where necessary. All zeroes are slashed throughout all of our programs so that you can tell the difference between the letter O and Ø. Please make sure that you input our programs exactly as we have printed them, we have checked our final copy before it is printed and will be error free.

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BIORHYTHM COMPATIBILITY ANALYSIS

BY ALEX MORALES

This program computes the bio-rhythm pattern of two individuals and displays a bar graph showing percentages of compatibility.

Input 2 digits for month and 2 digits for day with 4 digits for year; pressing GO after day and month and year.

Percentage accuracy may vary by 5-7 %.

The Cursor Group assumes no liability for any marital discord that may arise from the use of this program. The results will surprise you!

PHY=Physical Cycle
SEN=Emotional Cycle
COG=Intellectual Cycle

```
 1 .257 COMPAT
 2 .BY ALEX MORALES
1Ø CLEAR ;BC=8;FC=7
2Ø PRINT "ςςCOMPATIBILITY ANALYSIS";CX
   =-41;PRINT "FOR 2 PEOPLE":PRINT
3Ø FOR I=1TO 2
4Ø PRINT "ςςPERSON ",#1,I,"'S BIRTHDAY
   ?
45 PRINT "ςς(MM DD YYYY)
```

```
  5Ø INPUT "ζζMONTH"@(I+12)
  6Ø INPUT "ζζDAY"@(I+14)
  7Ø INPUT "ζζYEAR"@(I+16)
  8Ø CLEAR ;NEXT I
  9Ø GOSUB 1ØØØ
 1ØØ S=1;X=Ø
 11Ø IF @(17)>@(18)S=-1
 12Ø FOR I=@(17)TO @(18)STEP S
 13Ø R=I÷4;IF RM X=X+365;GOTO 15Ø
 14Ø X=X+366
 15Ø NEXT I
 16Ø IF S=1GOTO 27Ø
 17Ø IF @(17)=@(18)GOTO 22Ø
 18Ø W=365-(@(@(13))+@(15)-1)
 19Ø Z=@(@(14))+@(16)-1
 2ØØ X=ABS(X-W-Z)
 21Ø GOTO 3ØØ
 22Ø W=@(@(13))+@(15)-1
 23Ø Z=@(@(14))+@(16)-1
 25Ø X=ABS(W-Z)
 26Ø GOTO 3ØØ
 27Ø W=@(@(13))+@(15)-1
 28Ø Z=365-(@(@(14))+@(16)-1)
 29Ø X=ABS(X-W-Z)
 3ØØ R=X÷23;G=RM;R=X÷28;H=RM;R=X÷33;J=RM
 31Ø R=1ØØ÷23;T=RM;T=Tx1ØØ÷23
 32Ø R=1ØØ÷28;U=RM;U=Ux1ØØ÷28
 33Ø R=1ØØ÷33;V=RM;V=Vx1ØØ÷33
 34Ø K=ABS(1ØØ-((2xG)x(1ØØ÷23)));@(19)=K
     +((2xG)xT)÷1ØØ
 35Ø L=ABS(1ØØ-((2xH)x(1ØØ÷28)));@(2Ø)=L
     +((2xH)xU)÷1ØØ
 36Ø M=ABS(1ØØ-((2xJ)x(1ØØ÷33)));@(21)=M
     +((2xJ)xV)÷1ØØ
 37Ø @(22)=(@(19)+@(2Ø)+@(21))÷3
 38Ø CLEAR ;LINE -8Ø,42,Ø;LINE 79,42,1;L
     ine -8Ø,-9,Ø;LINE 79,-9,1
 39Ø FOR I=-79TO 79STEP 4;BOX I,16,3,1,1
     ;NEXT I
 4ØØ B=3Ø
 41Ø X=-70+B÷2
 42Ø FOR I=19TO 22
 425 IF @(I)>1ØØ@(I)=1ØØ
 43Ø Y=@(I)÷4-8
 435 IF @(I)<2GOTO 45Ø
 44Ø BOX X,Y,B÷2,@(I)÷2,3
 45Ø X=X+B
 46Ø NEXT I
 47Ø CY=-24;PRINT "ζζζPHYζζSENζζCOGζζAVG
 48Ø PRINT #5,@(19),"%",#4,@(2Ø),"%",#4,
     @(21),"%",#4,@(22),"%
 49Ø A=KP;RUN
1ØØØ @(1)=Ø;@(2)=31;@(3)=59;@(4)=9Ø;@(5)
     =12Ø;@(6)=151
1010 @(7)=181;@(8)=212;@(9)=243;@(1Ø)=27
     3;@(11)=304;@(12)=334;RETURN
```


TOWERS OF HANOI

BY

BRUCE DE VRIES

The instructions for this game are contained within the body of the program.

We suggest you start with 4 blocks when prompted "HOW MANY BLOCKS?", then as you understand how the game works, try it with more blocks

EXCELLENT GRAPHIC EFFECTS!!

```
 1Ø .TOWERS OF HANOI
 2Ø .BY BRUCE DeVRIES
 3Ø :RETURN ;CLEAR ;NT=Ø
 4Ø PRINT "THIS IS THE TOWERS OFζζζζζHAN
    OI PUZZLE";PRINT "THE OBJECT IS TO M
    OVE ALL THE BLOCKS ONE AT A TIME
 5Ø PRINT "FROM THE FIRST ROD TOζζζζζEIT
    HER THE SECOND OR THIRDROD";PRINT "T
    HERE IS ONE RULE YOU CAN
 6Ø PRINT "NOT PUT A LARGER BLOCK ON TO
    P OF A SMALLER ONE";PRINT "YOU MAYζ
    USE 2TO 7 BLOCKS
 7Ø PRINT "USE THE JOYSTICK TO SELECTTHE
    TOWER AND TRIGGER TO LIFT AND LOWERζ
    THE RING
 8Ø PRINT "HOW MANY BLOCKS ? ",;K=KP;TV=
    K;TV=13;R=K-48
 9Ø IF (R>7)+(R<2)GOTO 8Ø
1ØØ CLEAR ;V=4
11Ø @(1)=R;@(2)=Ø;@(3)=Ø
12Ø FOR D=1TO R;@(1Ø-R+D)=7-R+D;NEXT D
13Ø NT=V;T=Ø
14Ø FOR P=1TO 3
15Ø BOX Px56-112,-6,3,69,1
16Ø BOX Px56-112,-42,47,3,1
17Ø NEXT P
18Ø FOR B=8-RTO 7
19Ø BOX -56,27-Bx9,@(B+3)x5+1Ø,8,1
2ØØ NEXT B
21Ø P=2
22Ø P=P+JX(1);IF P>3P=1
23Ø IF P<1P=3
24Ø BOX Px56-112,-6,3,69,2
25Ø FOR Q=1TO 2Ø;NEXT Q
26Ø BOX Px56-112,-6,3,69,1
27Ø IF TR(1)=ØGOTO 22Ø
28Ø NT=Ø;T=T+1;CY=4Ø;CX=-77;PRINT "TURN",
    #4,T,;NT=V
29Ø IF @(P)=ØGOTO 22Ø
3ØØ X=Px56-112
31Ø Y=@(P)x9-45
32Ø S=@(Px7-@(P)+4);W=Sx5+1Ø
33Ø @(P)=@(P)-1
34Ø N=48+@(P);FC=4+@(P)x12Ø
```

```
35Ø BOX X,Y,W,8,3;Y=Y+9
36Ø BOX Px56-112,-6,3,69,1
37Ø BOX X,Y,W,8,3
38Ø FC=FC+12Ø
39Ø MU=N;N=N+1
4ØØ FOR Q=1TO 3Ø;NEXT Q
41Ø IF Y>3ØGOTO 45Ø
42Ø BOX X,Y,W,8,3
43Ø Y=Y+9
44Ø GOTO 37Ø
45Ø BOX X,Y,W,8,3
46Ø P=P+JX(1);IF P>3P=1
47Ø IF P<1P=3
48Ø X=Px56-112
49Ø BOX X,Y,W,8,3
5ØØ IF TR(1)=ØGOTO 45Ø
51Ø IF @(P)=ØGOTO 53Ø
52Ø IF S>@(Px7-@(P)+4)GOTO 45Ø
53Ø BOX X,Y,W,8,3
54Ø @(P)=@(P)+1
55Ø FOR A=8TO @(P)STEP -1
56Ø Y=Y-9;BOX X,Y,W,8,3
57Ø FC=FC-12Ø
58Ø N=N-1;MU=N
59Ø FOR Q=1TO 3Ø;NEXT Q
6ØØ BOX X,Y,W,8,3
61Ø NEXT A
62Ø BOX X,Y,W,8,1
63Ø @(Px7-@(P)+4)=S;IF @(P)#RGOTO 22Ø
64Ø IF P=1GOTO 220
65Ø S=1;FOR A=1TO R;S=Sx2;NEXT A;S=S-1
66Ø IF S=T CX=Ø;NT=Ø;PRINT "PERFECT SCO
   RE",;GOTO 69Ø
67Ø PRINT "ζYOU MADEζ",#1,T-S,"ζERRORS"
   ,
68Ø &(1Ø)=14;TV=13;NT=2Ø;PRINT "1ØØ1Ø11
   ØØ+2Ø22Ø11Ø-11ØØØ1ζζ1ζ11ζζ+2ζ22ζ11ζ
   -11ζ";CLEAR ;&(1Ø)=18Ø;GOTO 3Ø
69Ø &(1Ø)=14;TV=13;NT=1Ø
7ØØ PRINT "66Ø6656-7ØØ6Ø65Ø55456ØØ4Ø46Ø
   6656-7ØØx2Øx2xlxlxl-7Ø54ØØØØ6xlxlxl
   x2Øx2xlØØØØ6xlxlxlx2Øx2xlØØØØ",
71Ø CLEAR ;&(1Ø)=18Ø;GOTO 3Ø
```

MANUALS**MANUALS**MANUALS**MANUALS

★NOTE: ALL MANUALS SENT 3RD CLASS UNLESS OTHERWISE DESIGNATED★

1. Bally On-Board ROM Sub-Routines. Explains the use of the on-board routines which allow you to perform such things as you find in the "Machine Language Programs" in Cursor. Includes ASCII Standard & Nonstandard Character Sets, Cassette Memory Structure; Output Ports; Input Ports; Bally Data Base Locations; Bally Memory Locations; and On-Board ROM 8K Hex Dump. $3.99

2. Hackers Manual. Describes features provided in the Tiny Basic but not documented in the Bally Instruction Booklet. (Additional Commands). $3.49

3. Disassembled Tiny Basic (CDOS Z80 Assembler Version 02.15) A complete assembly language listing including OP Code and comments of the Tiny Basic Cartridge. $7.49

4. Disassembled Brickyard & Clowns. A complete assembly language listing including OP Code and comments. $7.99

5. Disassembled DEMO Cassette. A complete assembly language listing including OP Code and comments. $7.49

6. Bally System Description Book. Extensive and includes "Electrical Specifications for Midway Custom Circuits", Timing Interrupt handling explanations, etc. $7.99

7. Disassembled System Software. A complete assembly language listing including OP Code and comments to include: Home Video Game Equates; Port Equates; System Call Indexes; Macros; Music Macros; Music Equates; System RAM Memory Cells; User Supplied Routines; Masks; UPI Routines Address Tables; Sentry; BCD Divide; BCD Subtract & Add; Decrement Counters & Timers; Music CPU; Vectoring Routines; Paint Rectangle Routines; Write Routines; Character Display Routines; Display BCD; Menu Routines and much, much more. $11.99

8. Disassembled On-Board Games. A complete assembly language listing including OP Code and comments to include: Scribbling, Calculator, Checkmate, Gun Fight. $13.75

9. Bally Service Manual. Schematics, Parts Lists, instructions for removing RF Shields, and much more. No one should be without it!! $3.19

10. PEEK n' POKE: The only manual written that is truly beginner level. Opens up the power of machine language; tells how to get floating point decimal out of this machine along with programs. $7.50

★NOTE: Add 7% to the total order for First Class Postage. SEND TO: CURSOR, P.O. Box 266, No. Hollywood, CA 91603

EXECUTIVE TIME CARD CALCULATOR

BY

GEORGE MOSES

George owns and operates a publishing house and actually uses this program to figure his payroll. George does not allow his employees to work overtime on weekdays, only on weekends.

This program uses the "executive math" routine described in the "HACKERS" manual to allow decimal math computations.

Computer will ask for "TIME-IN" and "TIME-OUT". You may use 24 hour time or regular.

If you have single digit hours precede with zero. Press 1 for AM, 2 for PM. Program takes a little time after hitting AM or PM indicator, so be patient!

```
1Ø CLEAR ;NT=Ø;@(9)=1;@(8)=2;@(27)=6;@
   (44)=1;@(43)=5;H=1ØØØ
2Ø PRINT ;GOSUB H;FOR A=99TO 98STEP -1
   ;@(A)=KP;TV=@(A);NEXT A;PRINT ":",;
   FOR B=81TO 8ØSTEP -1;@(B)=KP;TV=@(B
   );NEXT B;PRINT
3Ø PRINT "ζ(1)=AMζζ(2)=PM";$-@(9Ø),@(Ø
   ),@(18Ø);IF KP=5ØIF @(197)=56GOSUB
   2ØØØ
4Ø $÷@(72),@(18),@(1Ø8);IF DGOTO 6Ø
5Ø $+@(9Ø),@(1Ø8),@(126);D=1;FOR C=72T
   O 125;@(C)=Ø;NEXT C;GOTO 2Ø
```

```
 6Ø $+@(9Ø),@(1Ø8),@(144);D=Ø;$-@(144),@
    (126),@(162);$+@(198),@(162),@(198);
    FOR F=72TO 197;@(F)=Ø;NEXT F
 7Ø PRINT ;PRINT "ζ(1)=CONTINUEζζ(2)=TO
    TALS";IF KP=49GOTO 2Ø
 8Ø @(99)=4;$-@(9Ø),@(198),@(54);PRINT
    ;PRINT "ζINPUT HOURLY WAGE $",;FOR
    G=8ØTO 78STEP -1;IF G=79PRINT ".",
 9Ø @(G)=KP;TV=@(G);NEXT G;$x@(72),@(19
    8),@(162);$x@(54),@(36),@(126);$+@(
    9Ø),@(126),@(1Ø8)
1ØØ $x@(1Ø8),@(72),@(144);NT=1;GOTO 3ØØ
    Ø
1ØØØ PRINT "ζTIME IN-ζ",;H=1Ø1Ø;RETURN
1Ø1Ø PRINT "ζTIME OUT-ζ",;H=1ØØØ;RETURN
2ØØØ $+@(9Ø),@(Ø),@(9Ø);RETURN
3ØØØ CLEAR ;CY=16;PRINT "REGULAR HOURS==
    ======",;IF @(71)=56PRINT "4Ø.ØØ";G
    OTO 3Ø3Ø
3Ø1Ø FOR H=2Ø7TO 2Ø4STEP -1;IF H=2Ø5PRIN
    T ".",
3Ø2Ø TV=@(H);NEXT H;GOTO 3Ø5Ø
3Ø3Ø PRINT "OVERTIME HOURS=======",;FOR
    J=63TO 6ØSTEP -1;IF J=61PRINT ".",
3Ø4Ø TV=@(J);NEXT J
3Ø5Ø PRINT "REGULAR PAY========$",;IF @(
    71)=56$x@(9Ø),@(72),@(18Ø);FOR K=19
    ØTO 186STEP -1;IF K=187PRINT ".",;G
    OTO 3Ø7Ø
3Ø6Ø IF @(71)=48FOR K=172TO 168STEP -1;I
    F K=169PRINT ".",
3Ø7Ø TV=@(K);NEXT K;IF @(71)=56PRINT "OV
    ERTIME PAY=======$",;$x@(126),@(72)
    ,@(216);FOR L=226TO 222STEP -1;IF L
    =223PRINT ".",
3Ø8Ø IF @(71)=56TV=@(L);NEXT L
3Ø9Ø PRINT "TOTAL PAY==========$",;IF @(
    71)=48FOR M=172TO 168STEP -1;IF M=1
    69PRINT ".",;GOTO 311Ø
311Ø TV=@(M);NEXT M;FOR A=ØTO 233;@(A)=Ø
    ;NEXT A;PRINT ;PRINT "FOR NEXT TIME
    CARD PRESS GO",;IF KP=13RUN
```

DISPLAY ALL 256 COLORS ON SCREEN AT SAME TIME

BY

J. BURIANYK

This program uses the PEEK command (%[Location]=Value) to store a machine language program in the "Tape Input Buffer". The program was first written in Z80 Assembly Language (MNEMONIC), then converted to HEX (OP CODE). The HEX was translated to DECIMAL and subsequently POKED into memory locations 20200 (4EE0) through 20260 (4F24).

We strongly suggest the use of The Cursor Group "PEEK N' POKE" manual to fully understand this procedure. The "PEEK N' POKE" manual is a beginner level instruction course.

The 256 Color program uses Screen Interrupts which Brett Bilbrey so brilliantly pioneered with his "CRITTER" program in the October 1980 issue of CURSOR.

The width of the 256 color display is governed by the value of &(9) in line 330. The interrupts allow concurrent processing. Once you are running this program, you can press "HALT", the Color program will continue running and you can eliminate lines 10 through 400 by keying in the line number and "GO" (remember-the BASIC program is only used to assemble a machine language program in the "Tape Input Buffer"),the BASIC program is no longer needed.

To stop the Color program, key-in ":RETURN". If you have eliminated lines 10-400, restart program by keying "CALL 20200".

The quantity of colors displayed can be limited by using Hand Control Knob #1.

This program will give your TV it's supreme test of quality. We use a 10 inch Panasonic with our Bally in the office, and it is capable of only showing about 14 colors. Our Zenith however showed them all!!

Many many thanks to Jerry & Brett for sharing their results with us!

```
 1Ø A=2Ø2ØØ;B=A;C=4ØØ;CLEAR
 2Ø X=-9741;GOSUB C
 3Ø X=2ØØ3Ø;GOSUB C
 4Ø X=18413;GOSUB C
 5Ø X=-2754;GOSUB C
 6Ø X=3539;GOSUB C
 7Ø X=-1Ø63;GOSUB C
 8Ø X=-21Ø3;GOSUB C
 9Ø X=-12978;GOSUB C
1ØØ X=8368;GOSUB C
11Ø X=-4621;GOSUB C
12Ø X=8819;GOSUB C
13Ø X=12622;GOSUB C
14Ø X=2ØØØ2;GOUSB C
15Ø X=-14859;GOSUB C
16Ø X=-6699;GOSUB C
17Ø X=-6691;GOSUB C
```

```
18Ø X=-6659;GOSUB C
19Ø X=7387;GOSUB C
2ØØ X=211;GOSUB C
21Ø X=467;GOSUB C
22Ø X=723;GOSUB C
23Ø X=979;GOSUB C
24Ø X=15637;GOSUB C
25Ø X=-3Ø4Ø;GOSUB C
26Ø X=-7683;GOSUB C
27Ø X=-7715;GOSUB C
28Ø X=-118Ø7;GOSUB C
29Ø X=-3647;GOSUB C
3ØØ X=31725;GOSUB C
31Ø X=2ØØØ2;GOSUB C
32Ø X=-13829;GOSUB C
33Ø &(15)=255;&(9)=18
34Ø CALL (B);GOTO 5ØØ
4ØØ %(A)=X;A=A+2;RETURN
5ØØ FOR A=ØTO 255STEP 8
51Ø BC=A;FC=A-2;CY=-4Ø;CX=-77
52Ø PRINT A;NEXT A
```

The following is a machine language explanation of the 256 Color program for use by hackers or those who have our PEEK N' POKE manual.

```
ADDRESS  OP CODE      MNEMONIC     COMMENTS
 2Ø2ØØ   F3           DI           ;(SAVE 20 BYTES OF THE LINE
                                    INPUT BUFFER FOR BASIC PGM
                                    INPUT) DISABLE INT
         D9           EXX          ;
         3E 4E        LD A,4E      ;LD ACCUMULATOR WITH H BYTE
                                    OF INT VECTOR ADDRESS
         ED 47        LD I,A       ;LD I REGISTER WITH H BYTE
                                    OF INT VECTOR ADDRESS
         3E F5        LD A,F5      ;LD ACCUMULATOR WITH L BYTE
                                    OF INT VECTOR ADDRESS
         D3 ØD        OUT (ØD),A   ;LD CUSTOM CHIPS WITH L
                                    BYTE OF INT VECTOR ADDRESS
         D9           EXX          ;
         FB           EI           ;ENABLE INT
         C9           RET          ;

 2Ø213   F7 4E        DEFW 4EF7    ;POINTS TO ADDRESS OF INT
                                    ROUTINE
 2Ø215   CD BØ 2Ø     CALL 2ØBØ    ;CALL BALLY BASIC INTERUPT
                                    ROUTINE TO SEE IF INT
                                    VECTOR IS ON LINE
         F3           DI           ;
         ED 73 22 4E  LD 4E22,SP   ;SAVE THE SP IN THE TAPE
                                    INPUT BUFFER
         31 22 4E     LD SP,4E22   ;MOVE SP
         F5           PUSH AF      ;SAVE ALL REGISTERS
         C5           PUSH BC      ;
         D5           PUSH DE      ;
         E5           PUSH HL      ;
         DD E5        PUSH IX      ;
         FD E5        PUSH IY      ;
 2Ø234   DB 1C        IN A,(1C)    ;GET KN(1) VALUE
         D3 ØØ        OUT (ØØ),A   ;SEND IT TO COLOUR PORTS
                                    Ø THRU 3
         D3 Ø1        OUT (Ø1),A   ;
         D3 Ø2        OUT (Ø2),A   ;
         D3 Ø3        OUT (Ø3),A   ;
         15           DEC D        ;THIS IS NOT NEEDED (BUT
                                    TAKES UP ONE BYTE TO EVEN
                                    UP THINGS)
         3D           DEC A        ;DECREASE KN(1) VALUE BY
                                    ONE
         2Ø F4        JR NZ,4FØE   ;COUNT KN(1) VALUE TO ZERO

 20248   FD E1        POP IY       ;PUT EVERYTHING BACK
         DD E1        POP IX       ;
         E1           POP HL       ;
         D1           POP DE       ;
         C1           POP BC       ;
         F1           POP AF       ;
         ED 7B 22 4E  LD SP, 4E22  ;RETURN THE SP
         FB           EI           ;ENABLE INT
         C9           RET          ;BYE
```

ONES AND FIVES
BY
BILL MEAD

1 to 4 player dice game.
Maximum Score: 1000 to 30,000

Points are accumulated by rolling: ones, fives, or 3 of a kind! 3 of a kind count only if all three are rolled at the same time!
Each "1" is 100 points
Each "5" is 50 points
3 of a kind is 100 times face value (3 4's+400)

EXAMPLES

1=1ØØ		1=1ØØ	
3	All dice	3	Only 2 dice
5=50	counted!!	6	counted.
3	3 3's+300	5=5Ø	Total of
3	Total of 450	2	150

You may try for a higher score by removing "non-score" dice and rolling them again. This is done by moving the joystick to your left when the arrow is pointing at the die you wish to remove. The arrow itself may be moved by pushing the joystick up or down. After you have removed all the dice you want, squeeze the trigger for reroll.

If you wish to collect score, move arrow down all the way off screen.

You must roll 500 or more in one turn to meld, otherwise the computer will credit you with score. After you have melded, your score will automatically accumulate.

If any 'new' roll or reroll fails to produce 'countable' dice, you lose your turn (Bally does it for you).

Pull trigger only to reroll erased dice.

Editors note: Bill Mead had only two months experience in programming the Bally at the time he devised this program. It shows what a newcomer can accomplish! We found that a person can

cheat with this program if he is determined, but cheating is not our "bag", so we left the program unaltered. We had a great time playing it!!

```
  1 CLEAR ;NT=1;BC=1Ø;FC=183;PRINT ;PRINT
    "ζζζ1'S & 5'S
  2 PRINT ;PRINT ;INPUT "# OF PLAYERS?"A;
    PRINT ;INPUT "MAX SCORE?"M;CLEAR ;U=Ø
    ;V=Ø;W=Ø;I=Ø;GOTO 1Ø
  3 CX=-35;CY=Ø;PRINT #1,J;RETURN
  4 IF (U>M)+(V>M)+(W>M)+(I>M)GOTO 9
  5 RETURN
  6 B=Ø;C=Ø;E=Ø;F=Ø;G=Ø;H=Ø;FOR O=1ØTO 15
    ;@(O)=Ø;NEXT O;RETURN
  9 CX=-25;CY=3Ø;MU=77;NT=2Ø;PRINT "WζIζN
    ζNζEζRζ↑↑↑";STOP
 1Ø FOR O=21TO 24;@(O)=Ø;NEXT O
 11 FOR P=1TO 4;IF P>A P=1
 12 BC=Px32;GOSUB 7ØØ
 13 CX=-35;CY=Ø;PRINT "ζζζζζ"
 23 K=Ø;L=Ø;GOSUB 6
3ØØ R=1;GOSUB 355;J=Ø;N=Ø;FOR D=ØTO 4;GOS
    UB 36Ø;NEXT D
 31Ø GOSUB 6;R=R+1;IF R>1GOSUB 8ØØ
 313 J=Ø;N=Ø;GOSUB 355;D=Ø
 316 IF D<ØD=Ø
 317 IF (D>4)+(L=Ø)GOSUB 9ØØ+1ØxP;GOSUB 4;
    NEXT P;GOTO 11
 318 CX=-49;CY=32-Dx16;PRINT "←",
 32Ø IF JX(P)MU=64;@(D)=Ø;BOX -61,CY,14,14
    ,2
 322 GOSUB 6
 325 IF TR(P)D=9;GOTO 335
 33Ø IF JY(P)=ØQ=1;GOTO 32Ø
 332 IF Q=ØGOTO 32Ø
 335 Q=Ø;CX=CX-6;PRINT "ζ";D=D-JY(P);IF D<
    8GOTO 316
 34Ø FOR D=ØTO 4;IF @(D)=ØGOSUB 36Ø
 345 NEXT D
 347 GOTO 31Ø
 35Ø FOR D=ØTO 4;IF D=ØGOSUB 36Ø
 355 CX=-35;CY=-2Ø;PRINT "ROLL",#1,R;RETUR
    N
 36Ø X=-61;Y=32-Dx16;Z=RND (6);@(D)=Z
 365 BOX X,Y,14,14,1;MU=7Ø+Z
 37Ø IF Z#Z÷2x2BOX X,Y,2,2,2
 375 IF Z=6BOX X-4,Y,2,2,2;BOX X+4,Y,2,2,2
 38Ø IF Z>1BOX X-4,Y+4,2,2,2;BOX X+4,Y-4,2
    ,2,2
 385 IF Z>3BOX X-4,Y-4,2,2,2;BOX X+4,Y+4,2
    ,2,2
 4ØØ IF Z=1B=B+1;@(1Ø)=B
 41Ø IF @(1Ø)=3J=7ØØ;GOSUB 3
 411 IF B>3@(1Ø)=Ø
 415 IF Z=2C=C+1;@(11)=C
 417 IF @(11)=3J=2ØØ;GOSUB 3
 418 IF C>3@(11)=Ø
 42Ø IF Z=3E=E+1;@(12)=E
 422 IF @(12)=3J=3ØØ;GOSUB 3
 423 IF E>3@(12)=Ø
 425 IF Z=4F=F+1;@(13)=F
 427 IF @(13)=3J=4ØØ;GOSUB 3
 428 IF F>3@(13)=Ø
 43Ø IF Z=5G=G+1;@(14)=G
 432 IF @(14)=3J=35Ø;GOSUB 3
 433 IF G>3@(14)=Ø
 435 IF Z=6H=H+1;@(15)=H
 437 IF @(15)=3J=6ØØ;GOSUB 3
 438 IF H>3@(15)=Ø
 44Ø T=Z
 45Ø IF Z=1T=T+99
 46Ø IF Z=5T=T+45
 465 IF Z#1IF Z#5T=Ø
 5ØØ N=N+T;CX=-30;CY=-35;PRINT #1,N;RETUR
    N
 7ØØ CX=-3Ø;CY=39;PRINT "PLAYER #",#2,P;R
    ETURN
 8ØØ K=K+J+N;IF J+N=ØK=Ø
 812 L=L+K;IF L>K L=K
 815 IF K=ØL=Ø
 816 CX=45;CY=39;PRINT #1,"=",L;RETURN
 91Ø U=U+L;@(21)=U;IF U<499U=Ø
 915 CX=3Ø;CY=2Ø;PRINT #1,"#1=",U;RETURN
 92Ø V=V+L;@(22)=V;IF V<499V=Ø
 925 CX=3Ø;CY=1Ø;PRINT #1,"#2=",V;RETURN
 93Ø W=W+L;@(23)=W;IF W<499W=Ø
 935 CX=3Ø;CY=Ø;PRINT #1,"#3=",W;RETURN
 94Ø I=I+L;@(24)=I;IF I<499I=Ø
 945 CX=3Ø;CY=-1Ø;PRINT #1,"#4=",I;RETURN
```

THE FORGOTTEN HALF

BY

PAT BRADY

CONTRIBUTING EDITOR

Here I am again! I knew I was not alone. I have received several letters and felt this one merits your attention:

I read your column in CURSOR and felt I had to write! I have suffered from the same problems you are going through now. However, my husband sat me down one day and explained how fortunate I was. He began with "at least you always know where I am!". He could be sitting at a bar, or going out with the boys twice a week, or worse yet, there could be another woman. He was right! I was being foolish, at least that's what I told him.

Lately I have noticed some strange things happening. I'll wake up in the middle of the night, and he's gone! In searching for him, I hear the quiet sound of the computer, but something is different about it now!

When I walk into the room, he shuts it off , rewinds the tape, and seems very embarrassed! The following night when I noticed he was gone again, I approached the room where the computer is located, and could have sworn I heard heavy breathing, rhythmatic sounds and quiet beeping. I was too afraid to look!!

I know this may sound silly, but I think my husband is becoming involved with the computer. What should I do???

Signed,

Bewildered

Dear Bewildered:

Your husband may have stumbled onto something! I think what must be done, as this is a very serious matter, quickly forward the tape to me, so that I can study it carefully. There may be a way we can adapt this to the forgotten Half.

Sincerely,

P.B.

Anyone else that feels that they have a problem or just a suggestion feel free to write. All letters will be answered!

Pat Brady
806 Walden Ct.
Schaumburg IL 60193

LINE RESEQUENCE

BY

MIKE PEACE

Ever want to change all the line numbers in a program without re-typing the whole program? Well, here is the answer that's sure to do the trick. There are a few drawbacks however, it can't change the GOSUBS or the GOTO's to correspond to the new line numbers. So, you may find it a good idea to initialize your subroutines by typing the original line number after the word "RETURN", like this:

```
25 FOR A=1TO 1Ø;BOX A,Ø,A,3,3;NEXT A;RETU
   RN 25
```

After you have done this to all your subroutines, you can go ahead and change the line numbers using the Line Resequencing Program. Now you will have new numbers on your subroutines, but you will have the old line numbers initialized so you can find the new numbers to re-direct your old GOSUBS to.

Input the following program and record it for safe keeping. Next input the program you wish to change (make sure that the line numbers are all less than 500, and be sure to have at least 1ØØ SZ after both programs are entered).

Now type in GOTO 5ØØ, and key in a line number sequence UNDER 5Ø (much less if it is a long program). You must not have your sequence go past 500 or you will be eating up the resequencing program.

After entering the sequence number, you will hear the computer beep as it pulls out each line number and enters it into memory. Finally a quick scale of notes, and it will begin listing your new program and all the new line numbers. Now you just have to type in the new GOSUBS and GOTO's and your all set to put it on tape for safekeeping.

LINE RESEQUENCER

```
5ØØ CLEAR ;INPUT "ςςSET LINE NUMBER SEQU
    ENCE"S;IF S>5ØGOTO 5ØØ
5Ø5 B=Ø;C=Ø;FOR A=-24576TO A+16ØØ;IF %(A
    )<1NEXT A
51Ø IF %(A)>5ØØNEXT A
511 IF %(A)=5ØØF=B;GOTO 525
52Ø B=B+1;@(B)=A;MU=B+48;NEXT A
525 FOR A=1TO 15;MU=48+A;NEXT A
53Ø FOR B=1TO F;C=C+S;%(@(B))=C;MU=48+B;
    NEXT B
54Ø LIST,F
```

Use the following program to try out your resequencer.

PERSPECTIVES

This program draws a perspective view of a highway lined with telephone poles entering a city.

```
 1Ø BC=111;&(9)=255
 2Ø CLEAR ;LINE -8Ø,1Ø,Ø
 3Ø FOR A=-8ØTO 8Ø
 4Ø LINE A,RND (ABS(A)+1)-1Ø,1
 5Ø NEXT A;LINE Ø,-1Ø,Ø
 6Ø A=1Ø;FOR C=1TO 2ØSTEP 2;A=A+C;B=A÷6
 7Ø BOX A-3,-B,1+B÷2,Bx1Ø,1
 8Ø BOX A-3,Bx3,Bx5,1+B÷2,1
 9Ø NEXT C;FOR A=-3ØTO 3Ø
1ØØ LINE A,-44,1;LINE Ø,-1Ø,Ø
11Ø NEXT A;FOR A=-44TO -11STEP 8
12Ø BOX Ø,A,ABS(A)÷1Ø,ABS(A)÷6,2
13Ø NEXT A;A=KP;RUN
```

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